

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE

NUMBER: MO-AB1-100000-00-002-X

SUBSYSTEM NAME: GAMMA RAY OBSERVATORY

REVISION : 1 01/22/91

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
■ P PART :	SWITCH, TOGGLE	ME452-0102-7252

PART DATA

- EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
TWO-POLE, TWO-POSITION, LEVER-LOCKED TOGGLE SWITCH
- REFERENCE DESIGNATORS: 31P73A12A3S3
- QUANTITY OF LIKE ITEMS: 1
ONE, S3 ON THE DEPLOYMENT AND POINTING PANEL
- FUNCTION:
THE S3 (RETRACT/OFF) SWITCH IS IN SERIES WITH THE S2 (ENABLE/DISABLE) SWITCH AND PROVIDES CONTROL POWER TO THE S1 (SURS. SELECT) SWITCH TO ACTIVATE THE DISCONNECT SOLENOIDS.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: MO-AB1-100000-00-002-03

SUBSYSTEM: GAMMA RAY OBSERVATORY
ITEM NAME: SWITCH, TOGGLE
REVISION# 1 01/22/91 R
CRITICALITY OF THIS FAILURE MODE: 2/2

■ FAILURE MODE:
FAILS OPEN, FAILS TO CLOSE - BOTH POLES

MISSION PHASE:
00 ON-ORBIT

■ VEHICLE/PAYLOAD/KIT EFFECTIVITY: 103 DISCOVERY
: 104 ATLANTIS
: 105 ENDEAVOUR

■ CAUSE:
STRUCTURAL FAILURE - BROKEN PART OPENS ONE POLE - LOOSE PART(S) MIGRATES TO OTHER POLE, SHORTS IT TO GROUND, CREATING AN OPEN; BROKEN HANDLE; STUCK HANDLE; VIBRATION; MECHANICAL SHOCK; PROCESSING ANOMALY

■ CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

■ REDUNDANCY SCREEN A) N/A
■ B) N/A
■ C) N/A

PASS/FAIL RATIONALE:

■ A)
■ B)
■ C)

- FAILURE EFFECTS -

■ (A) SUBSYSTEM:
LOSS OF CAPABILITY TO COMMAND SURS ARM RETRACT.

■ (B) INTERFACING SUBSYSTEM(S):
LOSS OF BOTH SURS COMMAND CIRCUITS, LOSS OF ABILITY TO COMMAND DISCONNECT OF BOTH SURS CONNECTORS, CANNOT RETRACT SURS ARMS.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: MO-AB1-100000-00-002-03

- (C) MISSION:
CANNOT DISCONNECT SURS CONNECTORS, CANNOT RETRACT SURS ARMS, CANNOT DEPLOY PAYLOAD, LOSS OF MISSION.
- (D) CREW, VEHICLE, AND ELEMENT(S):
NO EFFECT.
- (E) FUNCTIONAL CRITICALITY EFFECTS:
N/A

- DISPOSITION RATIONALE -

- (A) DESIGN:
REFER TO APPENDIX A, ITEM NO. 1, TOGGLE SWITCH
- (B) TEST:
REFER TO APPENDIX A, ITEM NO. 1, TOGGLE SWITCH
- (C) INSPECTION:
REFER TO APPENDIX A, ITEM NO. 1, TOGGLE SWITCH
- (D) FAILURE HISTORY:
REFER TO APPENDIX A, ITEM NO. 1, TOGGLE SWITCH.
- (E) OPERATIONAL USE:
EVA CREWMAN CAN MANUALLY DISCONNECT SURS CONNECTORS, RETRACT AND STOW SURS ARMS.

- APPROVALS -

RELIABILITY SUPERVISOR : M. P. RAGUSA
 DESIGN SUPERVISOR : D. M. DANIEL
 QUALITY SUPERVISOR : M. F. MERGEN
 NASA RELIABILITY :
 NASA SUBSYSTEM MANAGER :
 NASA QUALITY ASSURANCE :

G.E. : M. P. Ragusa
 : D. M. Daniel
 : M. F. Mergen
 : [Signature]
 : [Signature]
 : [Signature]
 : [Signature]
 EPD/c SSE: M. Salem Dine 2/22/91
 EPD/c scm [Signature] for P. Alanis